Title (en)
COUNTER-FLOW GAS SEPARATION MODULES AND METHODS

Title (de)
GEGENSTROM-GASTRENNMODULE UND VERFAHREN

Title (fr)
MODULES ET PROCÉDÉS DE SÉPARATION DE GAZ PAR CIRCULATION À CONTRECOURANT

Publication
EP 2958657 B1 20220928 (EN)

Application
EP 14702674 A 20140107

Priority
• US 201313770146 A 20130219
• US 2014010523 W 20140107

Abstract (en)
[origin: US2014230649A1] A gas separation method includes flowing a gas feed along a feed flow path within a housing directionally from a product end to a feed end of a gas separation membrane. After the feed flow path, the gas feed flows along a membrane flow path defined by the membrane from the feed end to the product end. The feed flow path is counter to the membrane flow path. Heat may be exchanged between the feed flow path and the membrane flow path and increase separation efficiency. Also, heat exchanged may compensate for some temperature drop in the membrane due to enthalpy of gas separation. A gas separation module includes a feed flow path within a housing extending directionally from a product end to a feed end of a membrane. The feed flow path is counter to a membrane flow path defined by the membrane.

IPC 8 full level
B01D 53/22 (2006.01)

CPC (source: EP US)
B01D 53/22 (2013.01 - EP US); **B64D 37/32** (2013.01 - US); B01D 2053/224 (2013.01 - EP US); B01D 2256/10 (2013.01 - EP US); B01D 2257/104 (2013.01 - EP US); B01D 2259/4575 (2013.01 - EP US)

Citation (examination)
• EP 1857166 A1 20071121 - GENERON IGS INC [US]
• US 2011239866 A1 20111006 - COAN FREDERICK L [US], et al
• US 2005183853 A1 20050825 - MILLI OTTAVIO [IT]

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)
US 2014230649 A1 20140821; **US 9340297 B2 20160517**; CN 104853831 A 20150819; CN 104853831 B 20171121; EP 2958657 A1 20151230; EP 2958657 B1 20220928; JP 2016513010 A 20160512; JP 6258356 B2 20180117; WO 2014130166 A1 20140828

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US 201313770146 A 20130219; CN 201480003465 A 20140107; EP 14702674 A 20140107; JP 2015558005 A 20140107; US 2014010523 W 20140107